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Entry information

Entry name **LBP_HUMAN**
 Primary accession number **P18428**
 Secondary accession numbers O43438 Q92672 Q9H403 Q9UD66
 Entered in Swiss-Prot in Release 16, November 1990
 Sequence was last modified in Release 37, December 1998
 Annotations were last modified in Release 44, July 2004

Name and origin of the protein

Protein name **Lipopolysaccharide-binding protein [Precursor]**
 Synonym **LBP**
 Gene name **Name: LBP**
 From Homo sapiens (Human) [TaxID: 9606]
 Taxonomy Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Primates; Catarrhini; Hominidae; Homo.

References

[1] SEQUENCE FROM NUCLEIC ACID.

MEDLINE=90385281;PubMed=2402637 [NCBI, ExPASy, EBI, Israel, Japan]
Schumann R.R., Leong S.R., Flaggs G.W., Gray P.W., Wright S.D., Mathison J.C., Tobias P.S., Ulevitch R.J.;
 "Structure and function of lipopolysaccharide binding protein.";
Science 249:1429-1431(1990).

[2] SEQUENCE FROM NUCLEIC ACID.

MEDLINE=94292492;PubMed=7517398 [NCBI, ExPASy, EBI, Israel, Japan]
Wilde C.G., Seilhamer J.J., McGrogan M., Ashton N., Snable J.L., Lane J.C., Leong S.R., Thornton M.B., Miller K.L., Scott R.W.;
 "Bactericidal/permeability-increasing protein and lipopolysaccharide (LPS)-binding protein. LPS binding properties and effects on LPS-mediated cell activation.";
J. Biol. Chem. 269:17411-17416(1994).

[3] SEQUENCE FROM NUCLEIC ACID.

Hubacek J.A., Aslanidis C., Schmitz G.;
 Submitted (OCT-1996) to the EMBL/GenBank/DDBJ databases.

[4] SEQUENCE FROM NUCLEIC ACID.

DOI=10.1006/geno.1997.5030;MEDLINE=98110577;PubMed=9441745 [NCBI, ExPASy, EBI, Israel, Japan]
 Kirschning C.J., Au-Young J., Lamping N., Reuter D., Pfeil D., Seilhamer J.J., Schumann R.R.;
 "Similar organization of the lipopolysaccharide-binding protein (LBP) and phospholipid transfer protein (PLTP) genes suggests a common gene family of lipid-binding proteins.";
 Genomics 46:416-425(1997).

[5] SEQUENCE FROM NUCLEIC ACID.

TISSUE=Liver;

Long J.Y., Liu J.Q., Xue Y.N., Wang H.X.;

"Cloning and sequencing of human lipopolysaccharide-binding protein gene.";
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[6] SEQUENCE FROM NUCLEIC ACID.

DOI=10.1038/414865a;MEDLINE=21638749;PubMed=11780052 [NCBI, ExPASy, EBI, Israel, Japan]

Deloukas P., Matthews L.H., Ashurst J.L., Burton J., Gilbert J.G.R., Jones M., Stavrides G., Almeida J.P., Babbage A.K., Bagguley C.L., Bailey J., Barlow K.F., Bates K.N., Beard L.M., Beare D.M., Beasley O.P., Bird C.P., Blakey S.E., Bridgeman A.M., Brown A.J., Buck D., Burrill W.D., Butler A.P., Carder C., Carter N.P., Chapman J.C., Clamp M., Clark G., Clark L.N., Clark S.Y., Clee C.M., Clegg S., Cobley V.E., Collier R.E., Connor R.E., Corby N.R., Coulson A., Coville G.J., Deadman R., Dhami P.D., Dunn M., Ellington A.G., Frankland J.A., Fraser A., French L., Garner P., Grafham D.V., Griffiths C., Griffiths M.N.D., Gwilliam R., Hall R.E., Hammond S., Harley J.L., Heath P.D., Ho S., Holden J.L., Howden P.J., Huckle E., Hunt A.R., Hunt S.E., Jekosch K., Johnson C.M., Johnson D., Kay M.P., Kimberley A.M., King A., Knights A., Laird G.K., Lawlor S., Lehvaeslaiho M.H., Leversha M.A., Lloyd C., Lloyd D.M., Lovell J.D., Marsh V.L., Martin S.L., McConnell L.J., McLay K., McMurray A.A., Milne S.A., Mistry D., Moore M.J.F., Mullikin J.C., Nickerson T., Oliver K., Parker A., Patel R., Pearce T.A.V., Peck A.I., Phillimore B.J.C.T., Prathalingam S.R., Plumb R.W., Ramsay H., Rice C.M., Ross M.T., Scott C.E., Sehra H.K., Shownkeen R., Sims S., Skuce C.D., Smith M.L., Soderlund C., Steward C.A., Sulston J.E., Swann R.M., Sycamore N., Taylor R., Tee L., Thomas D.W., Thorpe A., Tracey A., Tromans A.C., Vaudin M., Wall M., Wallis J.M., Whitehead S.L., Whittaker P., Willey D.L., Williams L., Williams S.A., Wilming L., Wray P.W., Hubbard T., Durbin R.M., Bentley D.R., Beck S., Rogers J.;

"The DNA sequence and comparative analysis of human chromosome 20.";
 Nature 414:865-871(2001).

[7] SEQUENCE OF 1-41 FROM NUCLEIC ACID.

Sutton C.L., Smith R.I.F., Centola M.B., Theofan G.;

Submitted (MAY-1995) to the EMBL/GenBank/DDJB databases.

[8] 3D-STRUCTURE MODELING.

MEDLINE=98227852;PubMed=9568897 [NCBI, ExPASy, EBI, Israel, Japan]

Beamer L.J., Carroll S.F., Eisenberg D.;

"The BPI/LBP family of proteins: a structural analysis of conserved regions.";
 Protein Sci. 7:906-914(1998).

Comments

- **FUNCTION:** Binds to the lipid moiety of bacterial lipopolysaccharides (LPS), a glycolipid present in the outer membrane of all Gram-negative bacteria. The LBP/LPS complex seems to interact with the CD14 receptor.
- **SUBCELLULAR LOCATION:** Secreted.
- **SIMILARITY:** Belongs to the BPI/LBP/Plunc superfamily. BPI/LBP family.

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Cross-references

	M35533; AAA59493.1; -.	[EMBL / GenBank / DDBJ] [CoDingSequence]
	X98657; CAA67226.1; -.	[EMBL / GenBank / DDBJ] [CoDingSequence]
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	X98661; CAA67226.1; JOINED.	[EMBL / GenBank / DDBJ] [CoDingSequence]
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	AF013501; AAC39547.1; JOINED.	[EMBL / GenBank / DDBJ] [CoDingSequence]
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	AF013511; AAC39547.1; JOINED.	[EMBL / GenBank / DDBJ] [CoDingSequence]
	AF105067; AAD21962.1; -.	[EMBL / GenBank / DDBJ] [CoDingSequence]
	AL080249; CAC10462.1; -.	[EMBL / GenBank / DDBJ] [CoDingSequence]
	L42172; AAA66446.1; -.	[EMBL / GenBank / DDBJ] [CoDingSequence]
	A35843; A35843.	
PIR	A54136; A54136.	
HSSP	P17213; 1EWF. [HSSP ENTRY / PDB]	
Genew	HGNC:6517; LBP.	
CleanEx	HGNC:6517; LBP.	
GeneCards	LBP.	
GeneLynx	LBP ; Homo sapiens.	
GenAtlas	LBP.	
MIM	151990 [NCBI / EBI] .	
GO	GO:0005615 ; Cellular component: extracellular space (<i>traceable author statement</i>).	
	GO:0006953 ; Biological process: acute-phase response (<i>traceable author statement</i>).	
	GO:0006968 ; Biological process: cellular defense response (<i>traceable author statement</i>).	
	GO:0009618 ; Biological process: response to pathogenic bacteria (<i>traceable author statement</i>).	
	QuickGo view.	

SOURCE	LBP; Homo sapiens.
Ensembl	P18428; Homo sapiens. [Entry / Contig view]
InterPro	IPR001124; LBP_BPI_CETP. Graphical view of domain structure.
Pfam	PF01273; LBP_BPI_CETP; 1. PF02886; LBP_BPI_CETP_C; 1. Pfam graphical view of domain structure.
SMART	SM00328; BPI1; 1. SM00329; BPI2; 1.
PROSITE	PS00400; LBP_BPI_CETP; 1.
ProDom	[Domain structure / List of seq. sharing at least 1 domain]
HOVERGEN	[Family / Alignment / Tree]
BLOCKS	P18428.
ProtoNet	P18428.
ProtoMap	P18428.
PRESAGE	P18428.
DIP	P18428.
ModBase	P18428.
SMR	P18428; 816E4B9E5E6864D0.
SWISS-2DPAGE	Get region on 2D PAGE.
UniRef	View cluster of proteins with at least <u>50%</u> / <u>90%</u> identity.

Keywords**Antibiotic; Glycoprotein; Lipid transport; Signal; Transmembrane.****Features**[Feature table viewer](#)

Key	From	To	Length	Description
SIGNAL	<u>1</u>	<u>25</u>	25	
CHAIN	<u>26</u>	<u>481</u>	456	Lipopolysaccharide-binding protein.
CARBOHYD	<u>300</u>	<u>300</u>		N-linked (GlcNAc...) (<i>Potential</i>).
CARBOHYD	<u>355</u>	<u>355</u>		N-linked (GlcNAc...) (<i>Potential</i>).
CARBOHYD	<u>386</u>	<u>386</u>		N-linked (GlcNAc...) (<i>Potential</i>).
CARBOHYD	<u>394</u>	<u>394</u>		N-linked (GlcNAc...) (<i>Potential</i>).
CONFLICT	<u>6</u>	<u>6</u>		R -> H (in Ref. <u>2</u>).
CONFLICT	<u>22</u>	<u>22</u>		E -> C (in Ref. <u>2</u>).
CONFLICT	<u>82</u>	<u>82</u>		N -> K (in Ref. <u>4</u>).
CONFLICT	<u>128</u>	<u>128</u>		S -> F (in Ref. <u>4</u>).
CONFLICT	<u>154</u>	<u>157</u>		VTAS -> GYCL (in Ref. <u>1</u>).
CONFLICT	<u>174</u>	<u>174</u>		L -> S (in Ref. <u>1</u>).
CONFLICT	<u>257</u>	<u>257</u>		R -> S (in Ref. <u>4</u>).
CONFLICT	<u>266</u>	<u>270</u>		VMSLP -> A (in Ref. <u>1</u>).
CONFLICT	<u>369</u>	<u>369</u>		L -> H (in Ref. <u>4</u>).
CONFLICT	<u>436</u>	<u>436</u>		L -> F (in Ref. <u>2</u> , <u>4</u> and <u>6</u>).

Sequence information

Length: **481 AA** [This is the length of the unprocessed precursor] Molecular weight: **53349 Da** [This is the MW of the unprocessed precursor] CRC64: **816E4B9E5E6864D0** [This is a checksum on the sequence]

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MGALARALPS	ILLALLLTST	PEALGANPGL	VARITDKGLQ	YAAQEGLLAL	QSELLRITLP
70	80	90	100	110	120
DFTGDLRIPH	VGRGRYEFHS	LNIHSCELLH	SALRPVPGQG	LSLSISDSSI	RVQGRWKVRK
130	140	150	160	170	180
SFFKLQGSFD	VSVKGISISV	NLLGSESSG	RPTVTASSCS	SDIADVEVDM	SGDLGWLLNL
190	200	210	220	230	240
FHNQIESKFQ	KVLESRICEM	IQKSVSSDLQ	PYLQTLPVTT	EIDSFADIDY	SLVEAPRATA
250	260	270	280	290	300
QMLEVMFKGE	IFHRNHRSPV	TLLAAVMSLP	EEHNKMVYFA	ISDYVFNTAS	LVEHEEGYLN
310	320	330	340	350	360
FSITDDMIPP	DSNIRLTTSK	FRPFVPRLAR	LYPNMNLELQ	GSVPSAPLLN	FSPGNLSVDP
370	380	390	400	410	420
YMEIDAFVLL	PSSSKEPVFR	LSVATNVSAT	LTFNTSKITG	FLKPGKVKVE	LKESKVGLFN
430	440	450	460	470	480
AELLEALLNY	YILNTLYPKF	NDKLAEGFPL	PLLKRVQLYD	LGLQIHKDFL	FLGANVQYMR

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- ☐ 1. [6599880](#). 25 May 00; 29 Jul 03. Bactericidal/permeability-increasing protein (BPI) deletion analogs. Horwitz; Arnold, et al. 514/12; 435/320.1 435/325 435/69.1 514/2 530/350. A61K038/00 A01N037/18 C07K014/00 C12P021/06 C12N005/00.
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- ☐ 2. [6440936](#). 08 Jun 01; 27 Aug 02. Anti-protozoan methods and materials. Lambert, Jr.; Lewis H.. 514/12; 424/405 424/45 424/DIG.12 514/2 514/937 514/944. A61K038/00.
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- ☐ 3. [6376462](#). 29 Mar 99; 23 Apr 02. Lipopolysaccharide binding protein derivatives. Gazzano-Santoro; Helene, et al. 514/12; 435/252.3 435/320.1 435/325 435/69.7 530/350 536/23.4. A61K038/16 C07K014/00 C07H021/04 C12N015/11 C12N015/63.
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- ☐ 4. [6355616](#). 25 Jun 99; 12 Mar 02. Derivative compounds derived from or based on bactericidal/permeability-increasing protein. Little, II; Roger G., et al. 514/14; 514/15 514/16 514/17 514/18 530/327 530/328 530/329 530/330 530/345. A61K038/07 A61K038/08 A61K038/10 C07K005/103 C07K007/06.
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- ☐ 5. [6306824](#). 14 Sep 99; 23 Oct 01. Uses of lipopolysaccharide binding protein. Dedrick; Russell L., et al. 514/8; 435/68.1 514/2. A61K038/00 A61K038/16.
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- ☐ 9. [6087126](#). 18 Jun 99; 11 Jul 00. Bactericidal/permeability-increasing protein (BPI) deletion analogs. Horwitz; Arnold, et al. 435/69.1; 435/320.1 435/325 435/358 536/23.2. C12P021/06 C12N015/00 C12N005/00 C12N005/06 C07H021/04.
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- ☐ 10. [6051553](#). 22 Jun 98; 18 Apr 00. Method for potentiating BPI protein product bactericidal activity by administration of LBP protein products. Horwitz; Arnold. 514/8; 514/12 514/14 514/152 514/192 530/350. A61K038/16 A61K038/00 C07K001/00.
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- ☐ 11. [6040291](#). 25 Mar 99; 21 Mar 00. Antimicrobial peptide. Hirata; Michimasa. 514/12; 210/690 210/908 514/13 525/54.1 530/324 530/326 530/810 536/127. A61K038/10 A61K038/16 B01D015/00 C07K007/08 C07K014/00.
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- ☐ 12. [6013631](#). 19 Jun 98; 11 Jan 00. Bactericidal/permeability-increasing protein (BPI) deletion analogs. Horwitz; Arnold, et al. 514/12; 530/350. A61K038/00 C07K001/00.
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- ☐ 13. [6013629](#). 07 Jul 97; 11 Jan 00. Anti-protozoan methods and materials. Lambert, Jr.; Lewis H. 514/12; 424/405 424/45 424/DIG.12 514/2 514/937 514/944. A61K038/00.
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- ☐ 14. [5990082](#). 22 Oct 97; 23 Nov 99. Uses of lipopolysaccharide binding protein. Dedrick; Russell L., et al. 514/8; 435/68.1 514/2. A61K038/00 A61K038/16.
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- ☐ 15. [5856438](#). 07 Jun 95; 05 Jan 99. Biologically active peptides from functional domains of bactericidal/permeability-increasing protein and uses thereof. Little, II; Roger G.. 530/324; 530/300 530/325 530/326 530/327 530/328. A61K038/00 A61K038/02 C07K005/00 C07K007/00.
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- ☐ 16. [5731415](#). 17 Jun 94; 24 Mar 98. Lipopolysaccharide binding protein derivatives. Gazzano-Santoro; Helene, et al. 530/350; 435/252.3 435/320.1 435/325 435/346 435/358 530/395 536/23.4 536/23.5. A61K038/17 C07K019/00 C12N015/00 C12N015/09.
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